further increase the success of in situ replacement.

Paul D. Hayes, MD

Department of Surgery
Leicester Royal Infirmary
Leicester, United Kingdom

REFERENCE

1. Calligaro KD, Veith FJ, Schwartz, M et al. Are gram-negative bacteria a contraindication to selective preservation on infected grafts? J Vasc Surg 1992;16:337-46.

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Regarding "A rational algorithm for duplex scan surveillance after carotid endarterectomy"

To the Editors:

We read with interest the paper by Roth and colleagues regarding requirement for duplex surveillance following carotid endarterectomy.[1] We have similarly looked at this issue and previously published in the *Journal of Vascular Surgery*.[2] In contrast to Roth and colleagues, we followed a conservative path with respect to asymptomatic contralateral carotid artery disease and restenosis. We only treated patients who developed symptoms in association with a tight stenosis. We related development of ipsilateral or contralateral stroke during follow-up to the presence of contralateral carotid artery disease at the time of operation, in addition to the development of ipsilateral restenosis or progression of contralateral carotid artery disease.

We found no relationship between development of restenosis and ipsilateral stroke. Similarly, there was no relationship between the presence of tight contralateral stenosis and subsequent contralateral stroke, nor was there a relationship between the progression of contralateral artery disease and subsequent contralateral stroke. On the basis of this, our data would support a conservative approach to restenosis and contralateral carotid artery disease. We feel that long-term duplex surveillance following carotid endarterectomy is unwarranted on these data, and funds would be better spent elsewhere.

Jonathan Golledge, MChir
Alun H. Davies, DM

London, United Kingdom

REFERENCES

1. Roth SM, Back MR, Bandyk DF, Avino AJ, Riley V, Johnson BL. A rational algorithm for duplex scan surveillance following carotid endarterectomy. J Vasc Surg 1999;30:453-60.
2. Golledge J, Cummin R, Ellis M, Beattie DK, Davies AH, Greenhalgh, RM. Clinical follow-up rather than duplex surveillance after carotid endarterectomy. J Vasc Surg 1997;25:55-63.

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Reply

The vascular surgery section at Charing Cross Hospital found no benefit from duplex surveillance after carotid endarterectomy in a prospective study of 305 patients studied at frequent (1 week and 3, 6, 9, 12 months) intervals during the first postoperative year and annually thereafter. As stated in their letter, "funds would be better spent elsewhere." We agree in part with these conclusions and proposed a "rational" surveillance algorithm based on duplex scanning performed at operation, at 4 to 6 weeks after endarterectomy, and thereafter on the basis of carotid disease severity. When enrolled in a stroke prevention program after carotid endarterectomy, most patients do not need intensive duplex scan surveillance, if a policy of operation for high-grade internal carotid artery (ICA) stenosis is adopted. When the intraoperative duplex scan verifies a normal repair, the incidence of restenosis is low, less than 4% by life table analysis at 3 years. Thus approximately 80% of patients with a normal repair site and less than 50% contralateral ICA diameter reduction stenosis can be followed up by clinical examination and a duplex scan at 1- to 2-year intervals. Mr Greenhalgh and coauthors similarly noted in their paper that "restriction of follow-up to patients with >50% stenosis would have reduced to 78% the percentage of patients requiring duplex surveillance, and still identifying 8 of 9 patients who required endarterectomy." Contralateral >50% ICA stenosis is a lesion with a propensity to progress in severity (approximately 10% incidence per year) and produce stroke or ICA occlusion. In our series, approximately 15% of patients with a normal repair had contralateral >50% stenosis, and duplex surveillance at 6-month intervals was adequate to detect asymptomatic disease progression. The carotid repair with residual or early appearing restenosis is at risk for progression to a high-grade lesion but occurs in less than 5% of patients. It seems prudent to me to evaluate these patients at 6-month intervals by duplex scanning. Duplex surveillance is one component of an effective stroke prevention program for patients after carotid endarterectomy. Control of atherosclerotic risk factors, lipid-lowering therapy, antiplatelet drug administration, and control of hypertension are equally important features of the patient's surveillance program. In our experience, the risk of stroke was less than 1% per year in all patient groups, if the duplex surveillance is tailored to the individual patient and a policy of repair of high-grade (>75%-80% diameter-reduction) asymptomatic stenosis is adopted. In their paper, Mr Greenhalgh and associates did not define what duplex criteria indicated a high-grade stenosis that warranted consideration for further intervention. At the University of South Florida, according to our patient surveillance data and correlation studies with contrast arteriography, we recommend repair of a progressive atherosclerotic ICA stenosis in appropriately screened surgical candidates when end-diastolic velocity at the site of stenosis is more than 125 cm/s and the ICA:CCA ratio is more

than four. For asymptomatic recurrent ICA stenosis, end-diastolic velocity more than 150 cm/s is our threshold for further evaluation by contrast arteriography.

Dennis F. Bandyk, MD

Division of Vascular Surgery

University of South Florida College of Medicine
Tampa, Fla

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